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Special Session on

"Static and Dynamic Wireless Charging for Automated Guided Vehicle"

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Call for Papers

Automated guided vehicle (AGV) has become a key component of modern intralogistics, such as warehouse, manufacturing workshop, cargo port, airport and so on. Almost all industries have come to use AGVs with high automation and all-day work to replace manpower for cost saving. Nevertheless, the AGVs are commonly powered by batteries, suffering from low energy storage density and thus leading to limited recharge mileage and working time. It is a good idea to equip the AGVs with static wireless charging systems, because they usually remain for some time at their end stations. Alternatively, dynamic charging systems can be facilitated to continuously recharge the on-the-road AGVs, such that the AGVs enjoy longer driving range while cutting down the battery size. Aiming to overcome the common pain point the AGVs are experiencing, i.e., short recharge mileage and working time due to low energy storage density, this special section (SS) will focus on static and dynamic wireless power transfer (WPT) technologies in AGV charging applications.

Topics of the Session:

Topics to be covered in this SS include, but are not limited to, the following:

- Inductive power transfer, capacitive power transfer and inductive-capacitive combined power transfer technologies
- Stationary and dynamic charging technologies
- Magnetic coupler designs (2D and 3D)
- Compensation topologies and parameter design methods
- Misalignment-tolerant design
- Modulations, modelling and control
- Emerging power electronics converter topologies
- Safety issues (e.g., passive electromagnetic field (EMF) shielding, active EMF cancellation and foreign object detection)
- Wide-band-gap semiconductor based WPT systems
- Simultaneous wireless power and data transmission technologies

- Navigation, Docking and Aligning technologies
- Bidirectional AGV wireless charging systems with smart grid (with renewable energy sources and energy storage systems)
- Operation modes and scheduling strategies for AGV wireless charging in smart grid